

We Claim:

1. An ankle-foot orthosis comprising:  
a structural frame formed from at least one layer of fabric impregnated with a hardened structural resin and including at least one anterior support member extending downwardly from an upper leg engaging portion to an anterior ankle portion, the anterior ankle portion extending to a medial portion connecting to a foot plate.
2. The ankle-foot orthosis according to claim 1, further comprising a fastening device connected to the at least one anterior support members at the upper leg engaging portion.
3. The ankle-foot orthosis according to claim 1, wherein the foot plate defines a toe end, a heel end and an intermediate region therebetween.
4. The ankle-foot orthosis according to claim 3, wherein the foot plate has a curvilinear shape and a tapered thickness that generally decreases from the intermediate region to the heel and toe ends.
5. The ankle-foot orthosis according to claim 4, wherein the heel end has a downward bend relative to the intermediate region.
6. The ankle-foot orthosis according to claim 1, further comprising a lateral leg support connected to the frame.
7. The ankle-foot orthosis according to claim 6, wherein the lateral leg support includes a strap arranged to form a loop.
8. The ankle-foot orthosis according to claim 1, wherein the anterior support members, the ankle portion and the medial portion include layers of woven glass fibers reinforced with a plastic resin.

9. The ankle-foot orthosis according to claim 8, wherein at least one portion of the frame includes unidirectionally oriented carbon fibers reinforcing said layers of woven glass fibers.

10. The ankle-foot orthosis according to claim 8, wherein the foot plate and the medial portion are reinforced with aramid fibers in combination with at least one layer of unidirectionally oriented carbon fibers or woven glass fibers.

11. The ankle-foot orthosis according to claim 1, wherein the foot plate is constructed from at least one layer of unidirectionally oriented carbon fibers in a layered configuration with a plurality of fibers extending in a plurality of orientations from the medial portion.

12. The ankle-foot orthosis according to claim 9, wherein carbon fibers extending from the medial connection towards and along the foot plate are oriented in a plurality of directions relative to the longitudinal direction of the foot plate.

13. The ankle-foot orthosis according to claim 8, wherein the medial connection is reinforced with aramid fibers that extend towards and are oriented in a least one direction relative to the longitudinal direction of the foot plate.

14. The ankle-foot orthosis according to claim 1, further comprising a layer of polymeric coated textile coating at least a portion of a surface of the structural frame.

15. The ankle-foot orthosis according to claim 1, wherein the foot plate is secured to the medial portion of the structural frame.

16. The ankle-foot orthosis according to claim 1, comprising two anterior support members, the anterior support members defining a clearance therebetween and joining at the anterior ankle portion.

17. The ankle-foot orthosis according to claim 16, wherein the two anterior support members join at the anterior ankle portion at about two-thirds the overall length of the structural frame from the upper leg engaging portion, said overall length of the structural frame defined as the distance from the upper leg engaging portion to the foot plate.

18. The ankle-foot orthosis according to claim 16, wherein an upper leg engaging portion extends from the proximal end of each anterior support member, each upper leg engaging portion having a width greater than a width of the anterior support members and a curvilinear profile.

19. The ankle-foot orthosis according to claim 1, wherein the structural frame includes at least one reinforcement integrated into the frame near or at the connection between the medial portion and the foot plate, said reinforcement member comprising at least one layer of structural material or composite.

20. The ankle-foot orthosis according to claim 19, wherein the at least one reinforcement member extends over at least a portion of the periphery of a portion of the structural frame.

21. The ankle-foot orthosis according to claim 1, wherein medial portion has a greater rigidity than the anterior support members and the anterior ankle portion.

22. The ankle-foot orthosis according to claim 1, wherein the structural frame is monolithic, said foot plate forming a portion of the structural frame.

23. An ankle-foot orthosis comprising:

a structural frame including at least one anterior support member extending downwardly from an upper leg engaging portion to an anterior ankle portion, the anterior ankle portion extending to a medial portion connecting to a foot plate.

24. The ankle-foot orthosis according to claim 23, further comprising a lateral leg support connected to the ankle portion.

25. The ankle-foot orthosis according to claim 23, wherein the foot plate has variable stiffness properties generally along the longitudinal length thereof.

26. The ankle-foot orthosis according to claim 23, wherein the foot plate has variable stiffness properties across the lateral and medial portions of the foot plate.

27. The ankle-foot orthosis according to claim 23, comprising two anterior support members, the anterior support members defining a clearance therebetween and joining at the anterior ankle portion.

28. The ankle-foot orthosis according to claim 23, wherein the structural frame is monolithic, said foot plate forming a portion of the structural frame.

29. The ankle-foot orthosis according to claim 28, further comprising a padding feature provided on at least one portion of the structural frame, said padding feature integrated with the structural frame.

30. The ankle-foot orthosis according to claim 23, further comprising at least one padding feature releasably secured to the structural frame.

31. An ankle-foot orthosis comprising:

a monolithic structural frame formed from at least one layer of fabric impregnated with a hardened structural resin and including at least one anterior support member extending downwardly from an upper leg engaging portion to an anterior ankle portion

connecting to a foot plate having variable stiffness properties generally along the longitudinal length thereof.

32. The ankle-foot orthosis according to claim 31, wherein a medial portion of the frame connects the anterior ankle portion to the foot plate.

33. An ankle-foot orthosis comprising:

a structural frame including at least one anterior support member extending downwardly from an upper leg engaging portion to an anterior ankle portion, the anterior ankle portion connecting to a foot plate, said structural frame coated with a polymeric coated textile material.

34. The ankle-foot orthosis according to claim 31 wherein the polymeric coated textile is integrated with the structural frame.

35. An ankle-foot orthosis comprising:

a structural frame formed of a plurality of layers of structural fibers reinforced with a plastic resin including at least one anterior support member extending downwardly from an upper leg engaging portion to an anterior ankle portion, the anterior ankle portion connecting to a foot plate, said frame including at least one portion wherein at least one layer of a plurality of unidirectional fibers extends generally along a first plane and a plurality of fibers extend along a second plane non-parallel to said first plane, said plurality of fibers extending along the second plane interposing the plurality of unidirectional fibers extending along the first plane.

36. The ankle-foot orthosis according to claim 35, wherein a plurality of layers of unidirectional fibers extending along the first plane are arranged to extend in a plurality of directions.